

Appendix C

Particle size distributions for sediment sampling sites in the
Umpqua River basin, Oregon, by reach.

Table C1. Bed-material sampling sites and summary data for the Umpqua River basin, Oregon, gravel availability study.

[**Abbreviation:** No., number; m, meters; km, kilometers; ft, feet; m², square meters; RKM, River kilometer; FPKM, flood-plain kilometer; --, data not available; D₁₆, 16th percentile diameter; D₅₀, 50th percentile diameter; D₈₄, 84th percentile diameter]

Site Information		UTM (m)						Surface			Subsurface ³			Armoring ratio ⁴	Lithology			Notes
Site No.	Site name ¹	Easting	Northing					D ₁₆	D ₅₀	D ₈₄	D ₁₆	D ₅₀	D ₈₄		Percent surface felsic intrusive	Percent subsurface felsic intrusive	Percent surface sandstone	
1	Scottsburg Bar	434850	4835111	Mainstem	River mile ² 29	RKM ² 48	FPKM ² 41.6	22.9	52.9	97.1	1.4	14.5	58.8	3.7	2.0%	2.3%	3.8%	Gravel disturbed by vehicles; sandstone bedrock; granitic clasts are relatively small; 2– 3 m willows
2	Bunch Bar	446084	4832703	Mainstem	41.5	70	61.7	13.9	30.3	63.2	1.3	14.3	69.4	2.1	1.3%	2.8%	2.5%	Smaller willows at outside head of bar than inside; sandy on top inside; felsic intrusives less weathered than site 1
3	Elkton Elementary School Bar	453029	4832029	Mainstem	47.5	80	70.8	11.5	22.5	40.2	--	--	--	--	0.8%	--	2.8%	Small island in lee of bedrock; gravel about 0.5 m thick
4	Jones Bar	457534	4826200	Mainstem	59.2	100	88.5	12.0	29.9	52.6	1.7	15.9	44.6	1.9	1.6%	0.9%	2.3%	Sandstone bedrock exposures on bar and margins; particles emplaced
5	Maupin Bar	456894	4825401	Mainstem	63.2	107	94.5	22.7	62.6	110.9	0.9	13.2	50.9	4.7	1.8%	2.2%	5.0%	Massive bar; very colorful and fresh
6	Swearingen Bar	453575	4821754	Mainstem	71.9	122.0	107.6	5.0	16.7	35.8	0.7	13.4	47.9	1.3	1.1%	3.8%	6.9%	--
7	Hutchinson Wayside Bar	456905	4819171	Mainstem	75.0	127.0	112.3	14.8	39.5	83.4	2.0	14.4	42.9	2.8	3.5%	2.4%	4.8%	Undisturbed bar with sparse to moderate willows; massive bedrock strath between bar and left bank

Table C1. Bed-material sampling sites and summary data for the Umpqua River basin, Oregon, gravel availability study—continued

[**Abbreviation:** No., number; m, meters; km, kilometers; ft, feet; m², square meters; RKM, River kilometer; FPKM, flood-plain kilometer; --, data not available; D₁₆, 16th percentile diameter; D₅₀, 50th percentile diameter; D₈₄, 84th percentile diameter]

Site Information		UTM (m)						Surface			Subsurface ³			Armoring ratio ⁴	Lithology			Notes
Site No.	Site name ¹	Easting	Northing					D ₁₆	D ₅₀	D ₈₄	D ₁₆	D ₅₀	D ₈₄		Percent surface felsic intrusive	Percent subsurface felsic intrusive	Percent surface sandstone	
8	Mary's Island Bar	459558	4814554	Mainstem	80.6	136.5	121.3	16.8	34.7	59.3	0.9	11.4	51.0	3.0	1.8%	1.3%	2.0%	Large island with dispersed 2 to 3m willows; clean and fresh looking; sampled near right edge about 2 m above river level
9	Indian Bend Road Bar	454026	4811748	Mainstem	88.7	151.5	134.3	9.9	26.5	54.0	1.9	15.6	42.3	1.7	3.0%	0.8%	3.0%	All gravel from past winter and deposited higher than other years, per landowner. Fluted sandstone bedrock along margin; light vegetation with 2 m willows at head of bar; rapids associated
10	Cougar Creek Bar	452386	4806769	Mainstem	92.7	158.3	140.9	21.9	47.1	77.6	1.2	16.8	64.7	2.8	3.3%	4.0%	2.3%	--
11	Branton Bar	455992	4804505	Mainstem	97.9	167.5	149.0	7.1	19.9	43.7	1.0	20.1	83.0	1.0	2.3%	0.6%	8.6%	Bar mined historically, per landowner. Sandstone bedrock at water's edge; head of bar is vegetated
12	Coles Valley Bar	461032	4802574	Mainstem	101.8	176.0	154.8	16.0	53.1	93.3	1.5	27.4	105.9	1.9	2.4%	2.1%	--	Relatively undisturbed bar; relatively swift flow; sampled upstream of larger, 2 to 3 m vegetation patch
13	Cleveland Rapids Bar	461834	4793926	Mainstem	109.1	186.5	164.7	21.0	56.0	92.8	1.7	29.2	105.3	1.9	1.6%	2.1%	1.5%	Bar very compacted; disturbed by vehicles; sampled midway to water's edge in less disturbed area

Table C1. Bed-material sampling sites and summary data for the Umpqua River basin, Oregon, gravel availability study—continued

[**Abbreviation:** No., number; m, meters; km, kilometers; ft, feet; m², square meters; RKM, River kilometer; FPKM, flood-plain kilometer; --, data not available; D₁₆, 16th percentile diameter; D₅₀, 50th percentile diameter; D₈₄, 84th percentile diameter]

Site Information		UTM (m)						Surface			Subsurface ³			Armoring ratio ⁴	Lithology			Notes
Site No.	Site name ¹	Easting	Northing					D ₁₆	D ₅₀	D ₈₄	D ₁₆	D ₅₀	D ₈₄		Percent surface felsic intrusive	Percent subsurface felsic intrusive	Percent surface sandstone	
14	Two Forks Bar	463827	4790826	Mainstem	111.6	191.0	168.4	12.4	55.8	121.4	2.9	23.7	74.1	2.4	0.3%	0.9%	--	Very coarse bar with 0.5 to 1 m boulders; downstream half of bar is covered in sand
15	Umpqua Sand and Gravel Bar	465903	4789440	South Umpqua River	115.3	197.5	171.4	4.6	18.6	40.8	0.9	12.7	52.5	1.5	2.2%	1.2%	--	Somewhat disturbed, sandy facies; conglomerate with veins present; no vegetation
16	Doyle Lane Bar	466433	4785587	South Umpqua River	118.1	202.0	175.1	8.6	30.4	58.5	--	--	--	--	3.8%	--	--	Bar previously mined, per landowner. Upstream end of bar disturbed by vehicles and has darker, weathered appearance; upstream end of bar very sandy; bar area more extensive on sampling date than in 2005 aerial photographs; sampled near downstream end below willow line
17	Elk Island Bar	471768	4784474	South Umpqua River	123.2	211.0	181.8	19.3	50.3	86.1	--	--	--	--	5.8%	--	--	Complex hydraulics in area; high flow channel on river left of island; dark, weathered appearance to much of bar; sampled at bare section on upstream and outside end of Elk Island
18	Little Valley Bar	468025	4780098	South Umpqua River	129.0	221.0	189.8	10.4	21.1	38.7	1.3	15.2	60.8	1.4	5.1%	5.0%	--	Mid section of bar has fine over coarse textures that seem to form most of bar; sampled directly below 1m vegetation

Table C1. Bed-material sampling sites and summary data for the Umpqua River basin, Oregon, gravel availability study—continued

[**Abbreviation:** No., number; m, meters; km, kilometers; ft, feet; m², square meters; RKM, River kilometer; FPKM, flood-plain kilometer; --, data not available; D₁₆, 16th percentile diameter; D₅₀, 50th percentile diameter; D₈₄, 84th percentile diameter]

Site Information		UTM (m)						Surface			Subsurface ³			Armoring ratio ⁴	Lithology			Notes
Site No.	Site name ¹	Easting	Northing					D ₁₆	D ₅₀	D ₈₄	D ₁₆	D ₅₀	D ₈₄		Percent surface felsic intrusive	Percent subsurface felsic intrusive	Percent surface sandstone	
19	Stratton Bar	466122	4777146	South Umpqua River	131.4	225.0	193.3	17.6	37.7	63.1	1.6	15.0	60.1	2.5	2.5%	4.3%	--	Lighter in color; more similar in texture and color to upstream bars as opposed to sites 21 and 22
20	Roberts Mountain Bar	467617	4772837	South Umpqua River	135.2	231.5	198.1	30.1	63.5	111.1	1.9	27.3	127.5	2.3	5.5%	4.0%	--	Bar mined some time in the past, per landowner (presence of stockpile). Point bar with light vegetation; bedrock present upstream
21	Civil Bend Bar	464339	4772592	South Umpqua River	138.0	236.0	201.7	12.7	25.4	45.6	--	--	--	--	3.5%	--	--	Very disturbed bar; darker colors; basaltic bedrock; sampled at upstream end of two connected bars
22	Willis Creek Bar	466162	4770427	South Umpqua River	139.8	239.5	204.0	8.1	15.7	27.6	--	--	--	--	1.0%	--	--	Low bar in the lee of bedrock outcrop; well sorted with little armoring; fine sediment with coarse clasts at water's edge; fines similar to bedrock
23	Doerner Bridge Bar	468433	4769711	South Umpqua River	141.5	242.0	206.5	29.0	66.5	109.0	--	--	--	--	6.1%	--	--	Relatively undisturbed and armored; abundant dark, hard, dense rocks; alcove/high flow channel to river right; low flow channel on river left; sampled on upstream most high strip
24	Weigle Bar	469804	4768231	South Umpqua River	144.7	248.0	211.0	9.4	22.1	47.2	1.2	12.9	52.1	1.7	10.1%	5.7%	--	--

Table C1. Bed-material sampling sites and summary data for the Umpqua River basin, Oregon, gravel availability study—continued

[**Abbreviation:** No., number; m, meters; km, kilometers; ft, feet; m², square meters; RKM, River kilometer; FPKM, flood-plain kilometer; --, data not available; D₁₆, 16th percentile diameter; D₅₀, 50th percentile diameter; D₈₄, 84th percentile diameter]

Site Information		UTM (m)						Surface			Subsurface ³			Armoring ratio ⁴	Lithology			Notes
Site No.	Site name ¹	Easting	Northing					D ₁₆	D ₅₀	D ₈₄	D ₁₆	D ₅₀	D ₈₄		Percent surface felsic intrusive	Percent subsurface felsic intrusive	Percent surface sandstone	
25	Booth Hill Bar	473043	4765770	South Umpqua River	147.9	253.5	215.8	30.0	58.2	100.9	--	--	--	--	5.3%	--	--	Extensively disturbed by vehicle traffic, extensive gold mining; dark polished rocks; 2 m ² bedrock outcrop at upstream end; sampled on back side of bar and willow levee
26	Myrtle Creek Bridge Bar	475854	4763649	South Umpqua River	150.5	258.5	219.9	13.3	28.6	60.1	--	--	--	--	6.8%	--	--	Bar form influenced by conglomerate bedrock outcrop and bridge; sampled at lower of two flat surfaces
27	Western Bar	475533	4763047	South Umpqua River	151.0	259.5	220.8	28.9	59.3	94.8	1.9	15.1	61.5	3.9	4.2%	4.7%	--	Bar ~1/2 km downstream of railroad bridge; densely vegetated with 0—2 m willows; conglomerate bedrock in channel and flanking bar; most of bar heavily disturbed; sampled in willow area where no disturbance
28	Missouri Bottom Bar	471545	4758470	South Umpqua River	155.6	267.0	227.0	26.6	66.2	127.3	--	--	--	--	5.1%	--	--	Low bar with light to moderate vegetation; small annuals
29	Lawson Bar	473188	4755958	South Umpqua River	158.2	271.0	230.1	10.0	19.3	40.5	3.6	18.2	47.4	1.1	2.3%	1.1%	--	Quartz--rich rocks abundant; very fine grains at water's edge; varnished, dark, hard, dense rocks present; 1.5 m willows are sparse; sampled above willow levee

Table C1. Bed-material sampling sites and summary data for the Umpqua River basin, Oregon, gravel availability study—continued

[**Abbreviation:** No., number; m, meters; km, kilometers; ft, feet; m², square meters; RKM, River kilometer; FPKM, flood-plain kilometer; --, data not available; D₁₆, 16th percentile diameter; D₅₀, 50th percentile diameter; D₈₄, 84th percentile diameter]

Site Information		UTM (m)						Surface			Subsurface ³			Armoring ratio ⁴	Lithology			Notes
Site No.	Site name ¹	Easting	Northing					D ₁₆	D ₅₀	D ₈₄	D ₁₆	D ₅₀	D ₈₄		Percent surface felsic intrusive	Percent subsurface felsic intrusive	Percent surface sandstone	
30	Gazley East Bar	473514	4754749	South Umpqua River	159.2	274.0	232.0	18.2	39.2	69.0	1.5	13.6	42.2	2.9	6.6%	3.4%	--	Large, well sorted bar; mature willows along levee; sampled slightly upstream end of apex
31	Stanton Park Bar, Right	476226	4755096	South Umpqua River	162.1	278.0	235.4	18.6	41.5	72.1	16.6	38.5	69.1	1.1	7.9%	1.6%	--	Large, very well sorted, mid--channel bar; crest vegetated with young willows and annuals; low flow presently on left; sampled at bar crest at upstream end
32	Jack's Bar	480071	4755208	South Umpqua River	165.1	283.0	239.9	37.4	85.6	154.7	--	--	--	--	12.4%	--	--	Bar did not exist before 1996 flood, per landowner. Material in lee of bedrock step
33	Days Creek Bridge Bar	485833	4757865	South Umpqua River	169.6	290.8	246.8	45.0	98.5	160.5	--	--	--	--	6.27%	--	--	--
34	Days Creek Bar	486057	4755125	South Umpqua River	172.0	294.5	250.0	39.2	108.0	192.3	4.5	41.5	98.1	2.6	7.6%	0.6%	--	Coarse bar with sand matrix; light to moderate vegetation with 2 to 3 ft willows in patches at upstream end; ~200ft from head of bar is upstream end of high flow channel
35	Bennett Bar	489079	4753870	South Umpqua River	175.2	300.0	254.6	36.6	77.4	162.7	--	--	--	--	4.9%	--	--	Vegetation and bedrock influenced

Table C1. Bed-material sampling sites and summary data for the Umpqua River basin, Oregon, gravel availability study—continued

[**Abbreviation:** No., number; m, meters; km, kilometers; ft, feet; m², square meters; RKM, River kilometer; FPKM, flood-plain kilometer; --, data not available; D₁₆, 16th percentile diameter; D₅₀, 50th percentile diameter; D₈₄, 84th percentile diameter]

Site Information		UTM (m)						Surface			Subsurface ³			Armoring ratio ⁴	Lithology			Notes
Site No.	Site name ¹	Easting	Northing					D ₁₆	D ₅₀	D ₈₄	D ₁₆	D ₅₀	D ₈₄		Percent surface felsic intrusive	Percent subsurface felsic intrusive	Percent surface sandstone	
36	Lavadoure Creek Road Bar	491123	4754071	South Umpqua River	177.0	303.5	257.0	61.6	121.5	204.7	4.7	33.7	124.3	3.6	10.5%	3.0%	--	High, coarse surface with relatively established vegetation
37	Ludwig Bar	493882	4753570	South Umpqua River	178.9	307.0	260.1	24.0	93.5	218.4	--	--	--	--	13.9%	--	--	Very coarse, sampled at waters edge
38	Milo Bridge Bar	496875	4753542	South Umpqua River	181.2	311.0	236.6	34.9	95.9	170.6	--	--	--	--	13.6%	--	--	Downstream of Milo covered bridge; left side in lee of bedrock. Sparse vegetation of young willows and herbaceous vegetation.
39	Old Bridge Bar	500149	4753982	South Umpqua River	184.1	316.0	267.9	29.5	79.7	169.2	--	--	--	--	22.1%	--	--	Smaller bar, vegetated on downstream end, patches of gravel and sand.
40	Parking Area Bar	500694	4753221	South Umpqua River	184.8	317.3	269.1	14.2	37.9	121.4	1.9	21.9	66.6	1.7	17.1%	20.9%	--	Very large clasts, large boulder included in subsurface sampling.
41	Tiller Bar	503890	4752732	South Umpqua River	187.0	321.0	272.5	12.0	30.1	58.5	--	--	--	--	5.51%	--	--	Majority of material appears to be coming from Elk Creek; many clasts have greenish--gneiss lithology. Bar is not representative of nearby bars.

Table C1. Bed-material sampling sites and summary data for the Umpqua River basin, Oregon, gravel availability study—continued

[**Abbreviation:** No., number; m, meters; km, kilometers; ft, feet; m², square meters; RKM, River kilometer; FPKM, flood-plain kilometer; --, data not available; D₁₆, 16th percentile diameter; D₅₀, 50th percentile diameter; D₈₄, 84th percentile diameter]

Site Information		UTM (m)						Surface			Subsurface ³				Lithology			
Site No.	Site name ¹	Easting	Northing	River	River mile ²	RKM ²	FPKM ²	D ₁₆	D ₅₀	D ₈₄	D ₁₆	D ₅₀	D ₈₄	Armoring ratio ⁴	Percent surface felsic intrusive	Percent subsurface felsic intrusive	Percent surface sandstone	Notes
Tributaries																		
42	Page Road Bar	475005	4794421	North Umpqua River	10.8	17.4	15.8	12.3	30.3	58.6	5.7	25.8	56.6	1.2	0.52%	0.23%	--	Bar surface grown vertically 2 ft over past winter, per landowner. Small patches of bedrock cropping out; sampled near downstream end of bar bend
43	Short's Quarry Bar	476987	4793994	North Umpqua River	12.5	20.1	18.2	8.0	84.4	158.4	--	--	--	--	0.00%	--	--	Large bar with loose gravel; no significant weathering; well vegetated with moderate willows up to 3 m; sample transect passed through sandy section but may be representative
44	Whistlers Bend Bar, Downstream	482025	4795932	North Umpqua River	21.6	34.8	32.6	27.1	61.5	151.6	--	--	--	--	0.52%	--	--	Thin veneer of gravel over bedrock; extensive bedrock in channel; some large clasts dark, weathered and firmly in place
45	Whistlers Bend Bar, Upstream	482672	4796008	North Umpqua River	22.2	35.7	33.5	36.5	56.9	87.1	2.5	42.3	82.4	1.3	0.50%	0.83%	--	Bar between river and bedrock overflow channel; left of rapids; appears light in color and fresh
46	Altered Giants Bar	483988	4795406	North Umpqua River	23.6	38.0	35.7	33.5	109.7	216.0	--	--	--	--	1.04%	--	--	Point bar with surface ~2.25 m above river level; appears moderately fresh and armored; moderate annuals grading to 1 m willows to flood plain

Table C1. Bed-material sampling sites and summary data for the Umpqua River basin, Oregon, gravel availability study—continued

[**Abbreviation:** No., number; m, meters; km, kilometers; ft, feet; m², square meters; RKM, River kilometer; FPKM, flood-plain kilometer; --, data not available; D₁₆, 16th percentile diameter; D₅₀, 50th percentile diameter; D₈₄, 84th percentile diameter]

Site Information		UTM (m)						Surface			Subsurface ³			Armoring ratio ⁴	Lithology			Notes
Site No.	Site name ¹	Easting	Northing					D ₁₆	D ₅₀	D ₈₄	D ₁₆	D ₅₀	D ₈₄		Percent surface felsic intrusive	Percent subsurface felsic intrusive	Percent surface sandstone	
47	Sutherlin Bridge Bar	469701	4805213	Calapooya Creek	River mile ² 9.0	RKM ² 14.5	FPKM ² 10.0	13.7	28.5	49.8	1.6	16.8	41.7	1.7	0.25%	0.34%	1.52%	Large point bar downstream of bridge; red dust present; clasts appear old; patches and levees of 3 to 4 m willows; creek incising through gravel package
48	Riddle Bridge Bar	470315	4754948	Cow Creek	2.5	4	3.5	15.7	30.9	61.6	5.9	30.7	78.7	1.0	3.78%	5.59%	--	River right expansion bar, just upstream of bridge; bar disturbed by vehicle traffic; sampled at undisturbed patch among 2 m willows; abundant altered sandstone; some felsic intrusives present
49	Conglomerate Outcrop Bar	463429	4752106	Cow Creek	7.9	12.7	11	12.5	27.7	52.9	--	--	--	--	3.01%	--	--	--
50	Myrtle Creek #2	475895	4763359	Myrtle Creek	0.0	0	0.05	11.0	22.4	41.8	--	--	--	--	15.84%	--	--	Weathered, coarse grained felsic intrusives present; bar ~50ft upstream of confluence with South Umpqua River; sampled as four 50 ft transects
51	Myrtle Creek #1	476066	4763330	Myrtle Creek	0.1	0.16	0.25	12.9	26.8	56.2	0.9	14.9	54.2	1.8	21.64%	13.47%	--	Largest, coarsest bar in creek; downstream of large concrete sidewall; river very channelized; felsic intrusives and fine grained volcanics abundant

¹In many cases, site names are informal designations developed for this study

²River mile, RKM, and FPKM for the tributary sites were measured upstream from the mouth of the tributary

³Subsurface samples taken only at select sites, therefore subsurface data and armoring ratios not available at all sites

⁴Armoring ratio computed as ratio between surface D_{50} and subsurface D_{50}











